Minnesota

Wind Powering America

Clean Energy for the 21st Century

Since earliest recorded history, wind power has been used to move ships, grind grain, and pump water. Today, wind power is also being used to provide electricity to homes, schools, businesses, and entire communities. Wind power has been the fastest growing source of electricity generation in the world in the 1990s. More than half the United States has wind resources that could support the development of utility-scale wind power plants.

Minnesota winds currently produce more than 800,000 megawatt-hours (MWh) of electricity annually; that is enough to power more than 101,000 average residential households for a year (based on a statewide annual average consumption of 7900 kWh per household). More than 90% of the power is produced by utility-scale power plants that use 750-kW turbines. The remaining wind-generated electricity is produced by smaller, independently owned turbines.

Green Power

"Green power" is power produced by renewable or environmentally friendly energy sources, as distinct from power produced by fossil fuel, nuclear, and other types of generators. Customers can arrange to purchase a certain amount of "green power" (actual energy in kilowatt-hours) per month, for which they commonly pay a small premium to completely or partly offset any higher cost of renewable power sources. The policy of transferring these costs to green power customers is called "green pricing."

Two Minnesota utilities offer green power programs: Great River Energy and Moorhead Public Service. Great River Energy and its electric cooperative utility members established a 2-MW-capacity wind farm in Chandler Hills. The project, financed through customer subscriptions and state incentive payments, began operation in 1999. The wind-generated electricity is sold in blocks of 100 kWh for an additional $2.00 per block per month. Great River's green power program currently has 1500 subscribers and a waiting list, which it hopes will increase to the point that the program can expand.

Moorhead Public Service utility's Capture the Wind program is also based on subscriber support. Less than three weeks after the utility offered the program, more than 400 customers had signed up, enough to support the installation of a 750-kW wind turbine. Customers can choose to pay a premium rate for all of their electricity or purchase it in 1000-kWh blocks for about $5.00 more per month. Commercial customers can pay the premium for all of their electricity or purchase it in 1500-kWh blocks.

State Financial Incentives

Minnesota offers incentive payments of 1.5 cents per kilowatt-hour for any power sold to utilities by qualifying facilities producing less than 2 MW. The system must be owned and operated by the landowner where the system is sited, or by a small business, a nonprofit organization, or a tribal council, if the system is located on a reservation. Facilities owned and operated by state entities, municipal utilities, or nonprofit electric cooperatives may qualify for a Renewable Energy Production Incentive

What is the installed wind energy capacity in the United States?

By January 2000, the total U.S. installed wind energy capacity was 2500 MW. (See http://www.awea.org/faq/instcap.html) That's enough electricity to meet the needs of 600,000 to 800,000 typical U.S. homes.

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Additional Resources

National Renewable Energy Laboratory
National Wind Technology Center
1617 Cole Boulevard
Golden, Colorado 80401
(303) 384-6979
www.nrel.gov/wind

U.S. Department of Energy
Chicago Regional Office
One South Wacker Drive
Suite 2380
Chicago, Illinois 60606-4616
(312) 353-6749
http://www.eren.doe.gov/cro/staff.html

U.S. Department of Energy
Wind Energy Program
Forrestal Building
1000 Independence Ave., S.W.
Washington, D.C. 20585
(202) 586-5348
www.eren.doe.gov/wind

American Wind Energy Association
122 C Street, NW, 4th Floor
Washington, D.C. 20001
phone (202) 383-2500
fax (202) 383-2505
www.awea.org

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(REPI) of 1.5 cents per kilowatt-hour for electricity sold to another entity.

Minnesota also offers a variety of tax exemptions for wind power generator owners and operators. For more information on tax exemptions contact the Minnesota Department of Commerce.

Net Metering

The concept of net metering programs is to allow the electric meters of customers with generating facilities to turn backwards when their generators are producing more energy than the customers' demand. Net metering allows customers to use their generation to offset their consumption over the entire billing period, not just instantaneously. This offset would enable customers with generating facilities to receive retail prices for more of the electricity they generate.

Minnesota's net metering program allows home and building owners to install wind systems that generate less than 40 kW and connect to the utility grid. Net excess generation during the normal billing cycle is purchased by utilities at the average retail utility energy rate, which is defined in Minnesota Rules 7835.0100, subp. 2a.

State Summary

Total—272.41 megawatts (MW)

Planned—30 MW

In-State Wind Energy Potential:
294,700 MW after land use and environmental exclusions
490 billion kilowatt-hours (kWh) per year electric energy

Installed Projects

Buffalo Ridge—25 MW installed capacity, 49.7 million kWh annual energy output (1998), power purchased by Northern States Power, Kenetech turbines.

Chandler—1.98 MW installed capacity, power purchased by Great River Energy, Vestas turbines.

Lake Benton—107.25 MW installed capacity, power purchased by Northern States Power, Zond turbines.

Marshall—0.6 MW installed capacity, 290,220 kWh annual energy output (1998), power purchased by Marshall Municipal Utilities, WindWorld turbines.

Woodstock—10.2 MW installed capacity, power purchased by Northern States Power, Vestas turbines.

Moorhead—0.75 MW installed capacity, power purchased by Moorhead Public Service, NEG Micon turbines

Hendricks (Lakota Ridge)—11.25 MW installed capacity, power purchased by Northern States Power and Northern Alternative Energy, NEG Micon turbines.

Pipestone County—103.5 MW installed capacity, power purchased by Northern States Power, Zond turbines.

Hendricks (Shaokatan Hills)—11.88 MW installed capacity, power purchased by Northern States Power, Vestas turbines.

Key Contacts

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St. Paul, Minnesota 55101-2145
1-800-657-3710
http://www.commerce.state.mn.us

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St. Paul, Minnesota 55101
(651) 225-0878
http://www.me3.org

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1916 2nd Avenue South
Minneapolis, Minnesota 55403
(612) 872-3280
http://www.windustry.org
http://www.awea.org